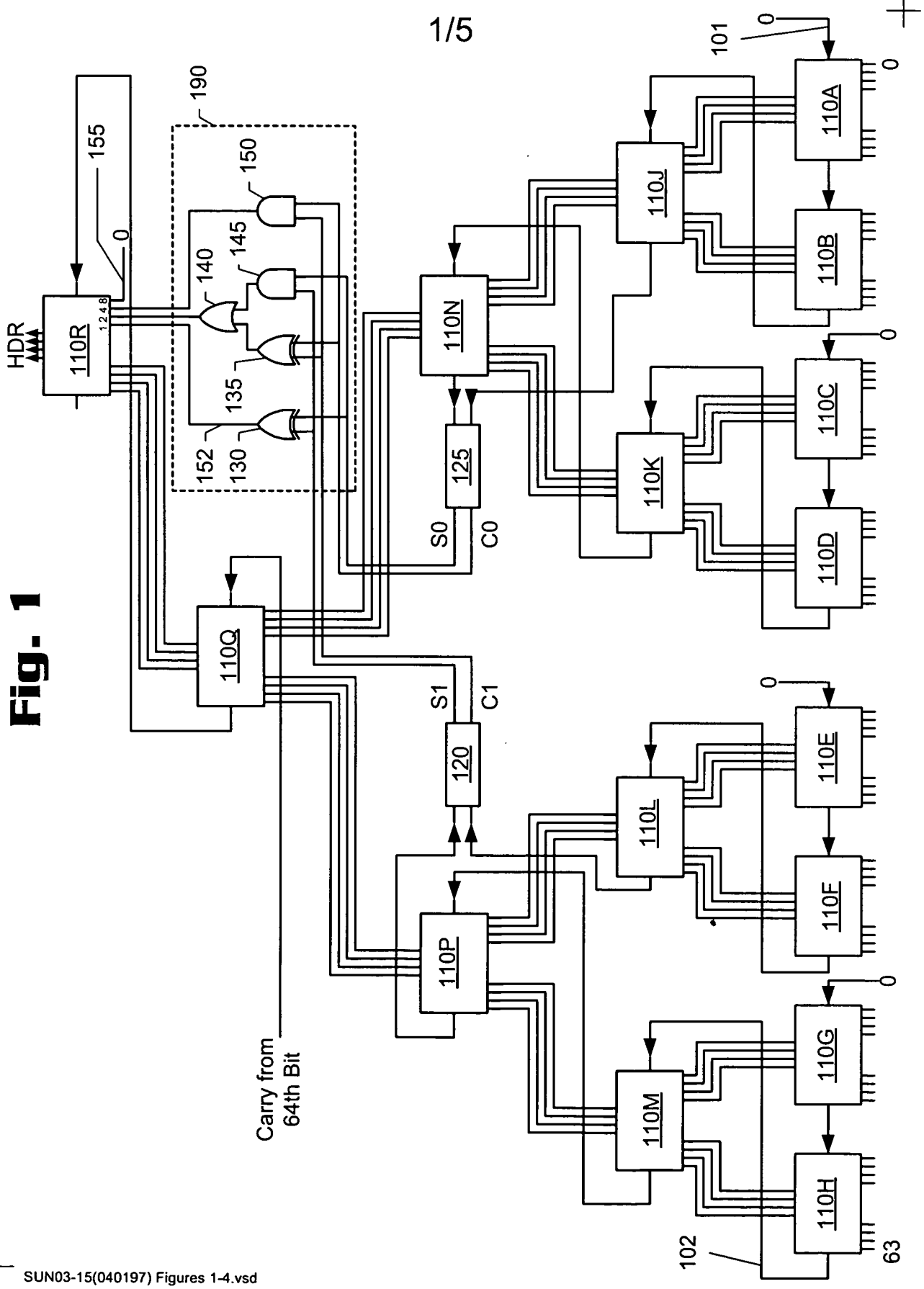
HDR
110R
1248
155
0
190
150
145
140
135
152
130
110N
125
S0
C0
110Q
S1
C1
120
110P
Carry from
64th Bit
110J
110K
110L
110M
101
102
110A
110B
110C
110D
110E
110F
110G
110H
0
63

Fig. 1

Fig. 2

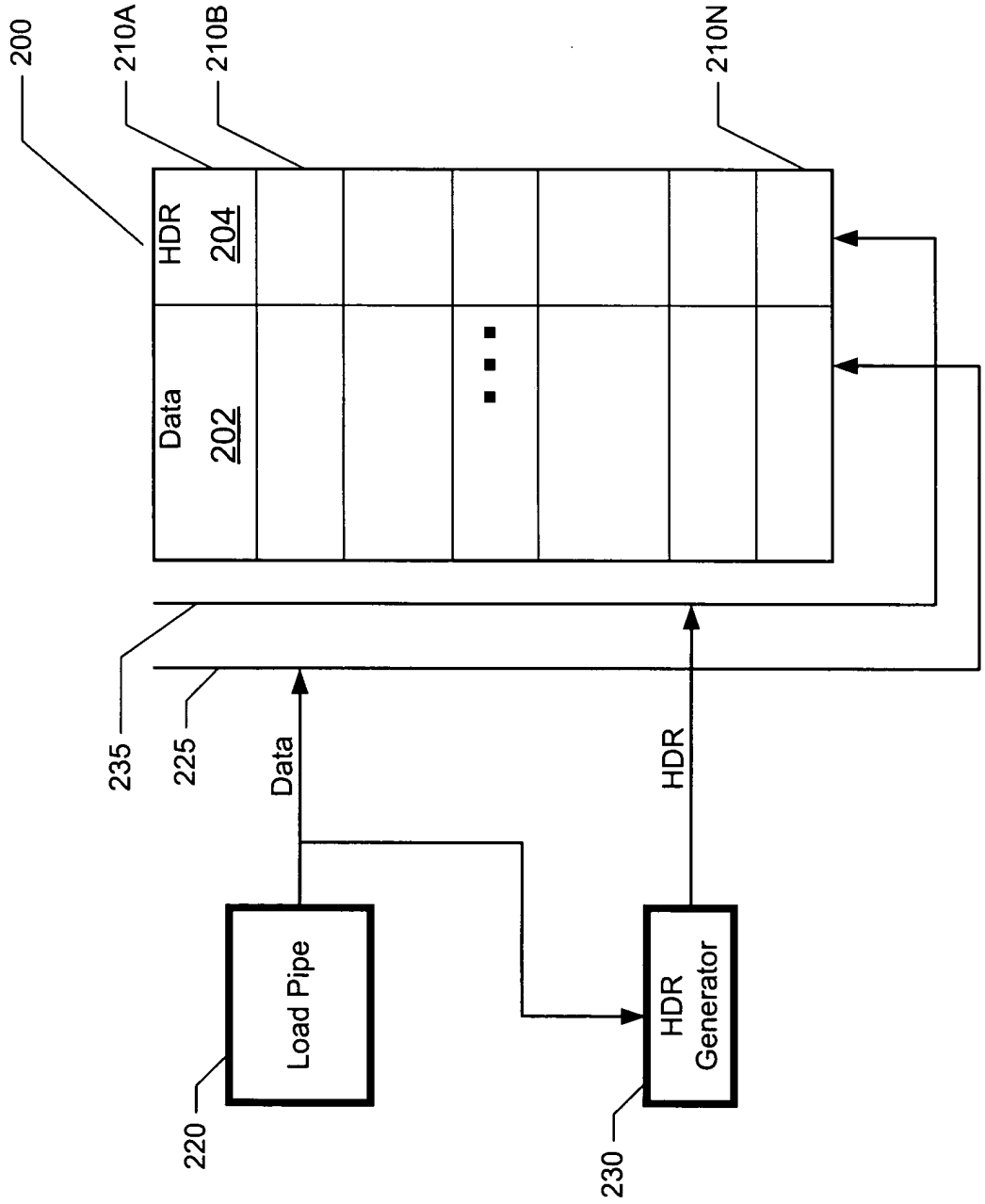
200
210A
210B
210N
HDR
204
Data
202
235
225
Data
HDR
Load Pipe
HDR Generator
220
230

Fig. 3

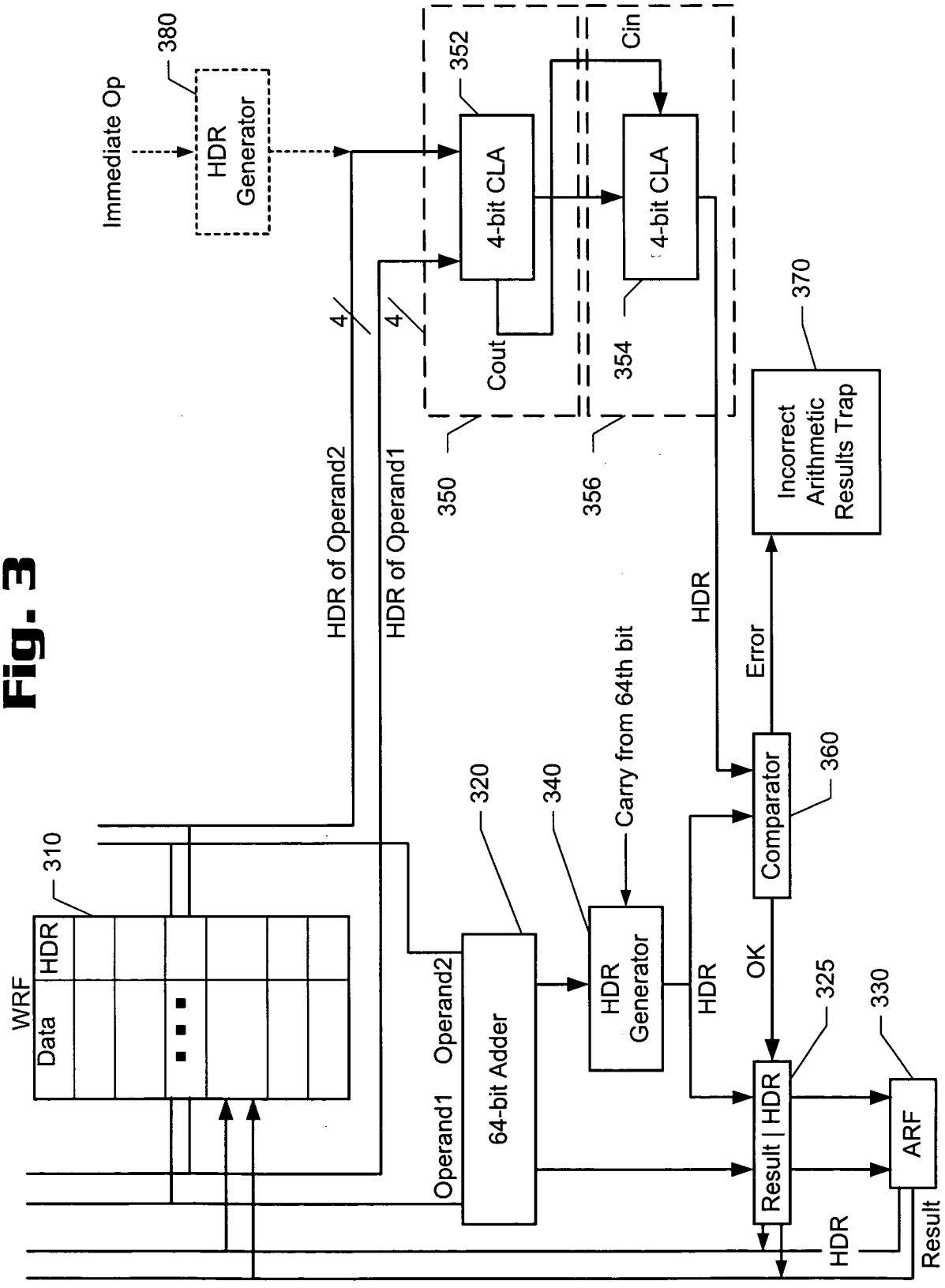
Immediate Op
380
HDR Generator
352
4-bit CLA
Cout
Cin
4-bit CLA
354
370
Incorrect Arithmetic Results Trap
4
4
HDR of Operand2
HDR of Operand1
350
356
HDR
Error
Carry from 64th bit
320
340
360
Comparator
310
WRF
HDR
Data
Operand2
Operand1
64-bit Adder
HDR Generator
HDR
OK
325
330
Result | HDR
ARF
HDR
Result

Fig. 4

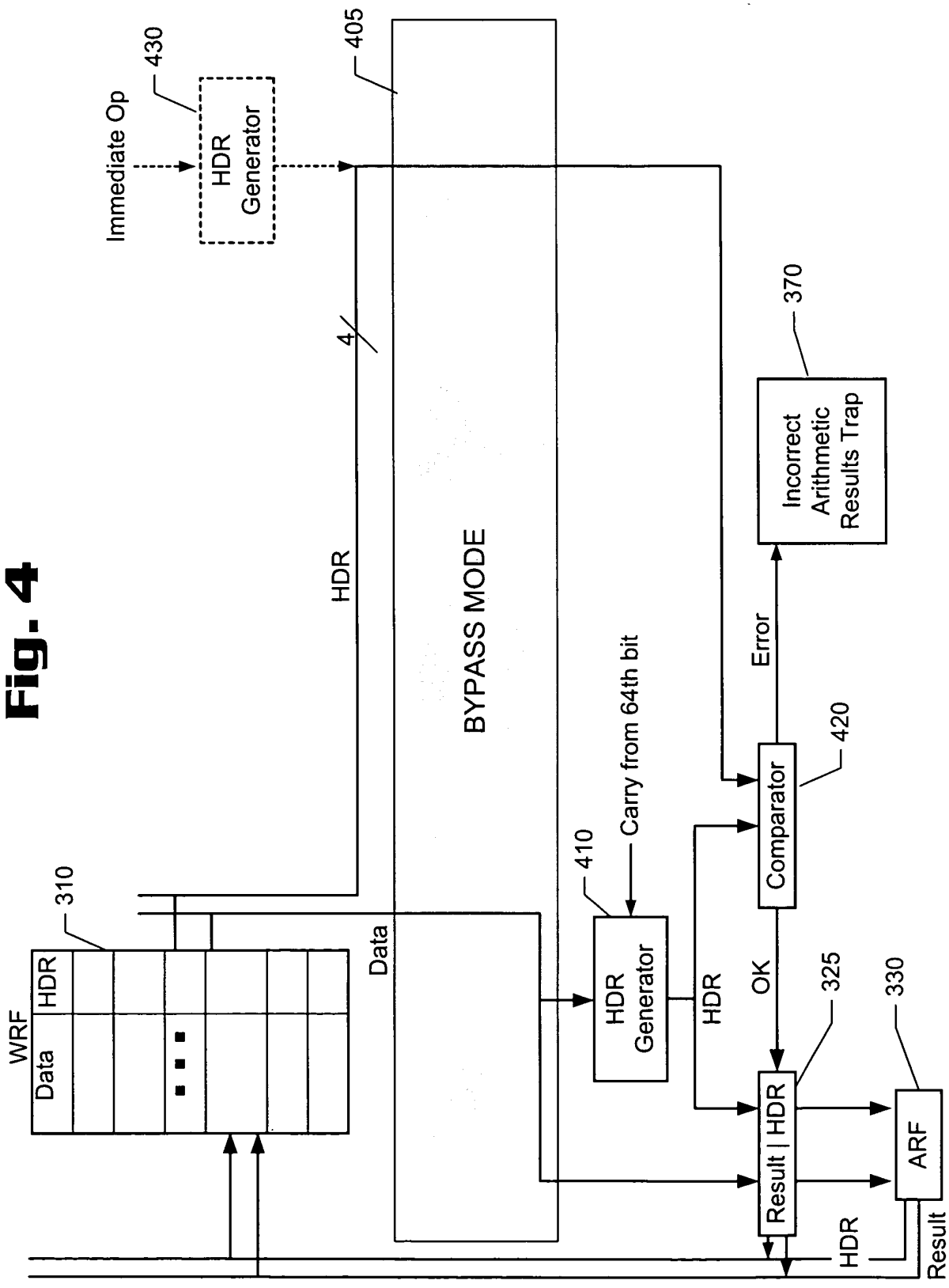
Immediate Op
430
HDR Generator
405
4
HDR
BYPASS MODE
370
Incorrect Arithmetic Results Trap
Error
420
Comparator
Carry from 64th bit
410
HDR Generator
HDR
OK
325
330
310
WRF
HDR
Data
Data
Result | HDR
ARF
HDR
Result

Fig. 5A

Truth Table

Inputs				Outputs			
S1	C1	S0	C0	B1	B2	B3	B4
0	0	0	0	0	0	0	0
0	0	0	1	0	1	0	0
0	0	1	0	1	0	0	0
~~0~~	~~0~~	~~1~~	~~1~~				
0	1	0	0	0	1	0	0
0	1	0	1	0	0	1	0
0	1	1	0	1	1	0	0
~~0~~	~~1~~	~~1~~	~~1~~				
1	0	0	0	1	0	0	0
1	0	0	1	1	1	0	0
1	0	1	0	0	1	0	0
~~1~~	~~0~~	~~1~~	~~1~~				
~~1~~	~~1~~	~~0~~	~~0~~				
~~1~~	~~1~~	~~0~~	~~1~~				
~~1~~	~~1~~	~~1~~	~~0~~				
~~1~~	~~1~~	~~1~~	~~1~~				

Fig. 5B

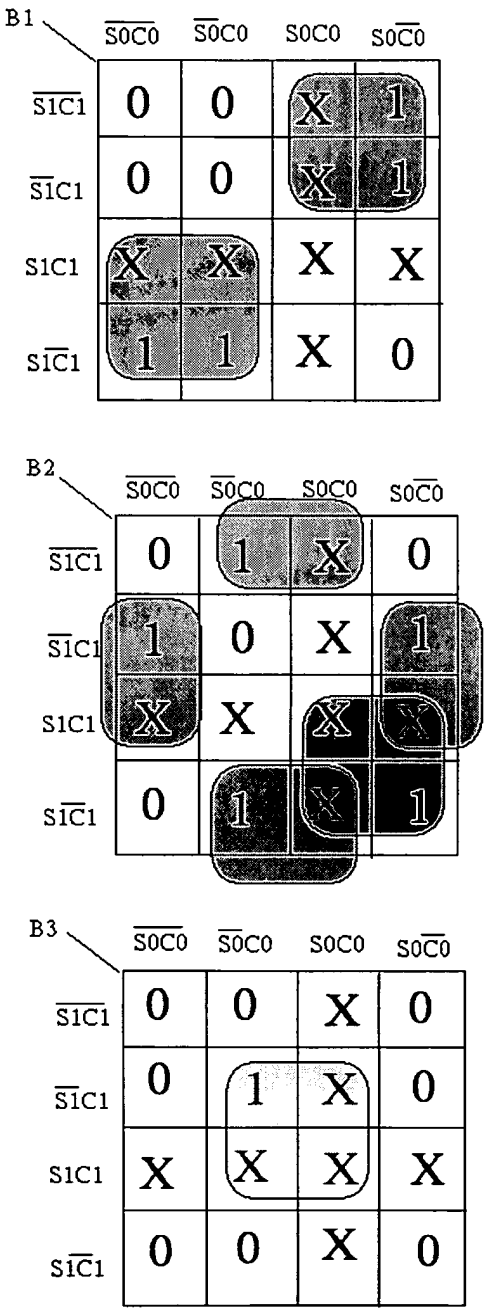

Fig. 5C

$B1 = S0\overline{S1} + S1\overline{S0} = S0 \oplus S1$

$B2 = \overline{C1}C0 + C1\overline{C0} + S1S0 = C1 \oplus C0 + S1S0$

$B3 = C0C1$

$B4 = 0$